

Listing of Claims:

1. (Previously Presented) A method for destroying or impairing target cells of a lesion in the vascular system in a mammalian subject, comprising:

administering to the subject a therapeutically effective amount of a photosensitizing agent, wherein the photosensitizing agent is conjugated to a ligand that selectively binds to an antigen on the target cells of the lesion in the vascular system, wherein the ligand is an antibody or an antibody fragment specific to the antigen selected from the group consisting of tumor surface antigen; tumor endothelial antigen; non-tumor endothelial antigen; tumor vessel wall antigen; neointimal antigens; arterial plaque antigens; and vascular smooth muscle cell antigens; and

irradiating at least a portion of the subject with light at a wavelength absorbed by the photosensitizing agent, wherein:

the light is provided by a light source that is external to the intact body of the subject;

the irradiation is at a rate of between about 5 and 100 mW/cm² and results in the activation of the photosensitizing agent; and

the photosensitizing agent is cleared from the skin and subcutaneous tissues of the subject prior to the irradiation; and wherein the duration of radiation exposure is between about 2 hours and 24 hours and the total light dose is between 500J/cm² and 10000J/cm².

2. (Previously Presented) A method for destroying or impairing target cells of a lesion in the arterial vascular system in a mammalian subject, comprising:

administering to the subject a therapeutically effective amount of a first conjugate comprising a first member of a ligand-receptor binding pair conjugated to an antibody or antibody fragment, wherein the antibody or antibody fragment selectively binds to an antigen on the target cells of the lesion in the arterial vascular system, wherein said antigen selected from

the group consisting of tumor surface antigen; tumor endothelial antigen; non-tumor endothelial antigen; tumor vessel wall antigen; neointimal antigens; arterial plaque antigens; and vascular smooth muscle cell antigens;

administering to the subject a therapeutically effective amount of a second conjugate comprising a second member of the ligand-receptor binding pair conjugated to a photosensitizing agent or photosensitizing agent delivery system, wherein the first member binds to the second member of the ligand-receptor binding pair; and

irradiating at least a portion of the subject with light at a wavelength absorbed by the photosensitizing agent, wherein the light is provided by a light source that is external to the subject, wherein the irradiation is between about 5 and 100 mW/cm² and that results in the activation of the photosensitizing agent or prodrug product; and wherein the duration of radiation exposure is between about 2 hours and 24 hours and the total light dose is between 500J/cm² and 10000J/cm².

3. (Previously Presented) The method of claim 1 or 2, wherein said light source is selected from the group consisting of one or a plurality of: laser diodes, fiber lasers, LEDs, non-laser light source, cold cathode fluorescent tube, incandescent lights, halogen lights, polymeric luminescent devices, fluorescent lights, discharge lamps, and electroluminescent devices.

4. (Original) The method of claim 1 or 2, wherein said light is directed through the skin in a direction parallel and lengthwise to the wall of a vascular vessel having the lesion.

5. (Original) The method of claim 3, wherein said laser diode is coupled to an optical fiber, and wherein said optical fiber directs said light lengthwise to the vessel wall having the lesion.

6. (Original) The method of claim 3, wherein said light emitting diode is a light emitting diode strip, and wherein said light emitting diode strip is placed over the skin overlying the lesion.

7. (Original) The method of claim 5, wherein said optical fiber diffuses said light when placed over the vessel wall having the lesion.

8. (Original) The method of claim 5, wherein said light source is a mat comprising a plurality of said optical fiber.

9. (Previously Presented) The method of claim 1 or 2, wherein:
the photosensitizing agent absorbs light in a range of 600 nm - 1100 nm; and the agent is delivered as a delivery system.

10. (Original) The method of claim 1 or 2, wherein said wavelength is from about 600 nm to about 1100 nm.

11. (Original) The method of claim 10, wherein said wavelength is greater than about 700 nm.

12. (Original) The method of claim 11, wherein said light results in a single photon absorption mode by the photosensitizing agent.

13. (Canceled)

14. (Currently Amended) The method of claim 9, wherein said complex is administered intravenously.

15. (Canceled)

16. (Original) The method of claim 2, wherein said ligand-receptor binding pair is selected from the group consisting of: biotin-streptavidin; chemokine-chemokine receptor; growth factor-growth factor receptor; and antigen-antibody.

17. (Previously Presented) The method of claim 9, wherein the photosensitizing agent delivery system comprises a liposome delivery system.

18. (Previously Presented) The method of claim 1 or 2, wherein said light source is pulse modulated to maximize depth of tissue penetration and minimize heat generation and power consumption.

19.-26. (Canceled)

27. (Previously Presented) The method of claim 2, further comprising administering to the subject a liposome delivery system separately conjugated to the second member of the ligand-receptor binding pair.

28. (Previously Presented) The method of claim 9, wherein the photosensitizing agent is selected from the group consisting of chlorins, bacteriochlorins, phthalocyanines, porphyrins, purpurins, merocyanines, psoralens, benzoporphyrin derivatives (BPD), porfimer sodium, aminolevulinic acid, indocyanine green, methylene blue, toluidine blue and texaphyrins.